

**CIWMB/LEA Annual Conference**

**San Diego International Airport:**  
**Tracking Our**  
**Environmental Footprint**

**August 1, 2006**

**Paul Manasjan, Director**  
**Environmental Affairs**

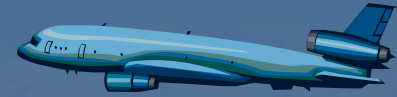
**San Diego County Regional Airport Authority**







# Outline



- Environmental Dept. Development
  - Role of Environmental Stewardship
- Environmental Aspects & Footprint
  - Commitment to manage via EMS
- Programs & Performance Measures
- Specific Projects
  - Landfill Clean Closure
  - Waste Reduction Baseline Study
  - Endangered Species Monitoring
- Public Outreach & Education
- Challenges





# San Diego International Airport (SDIA)

- Nation's Busiest Single-Runway Airport (29<sup>th</sup> busiest overall)
- 17.4 Million Annual Passengers
- >300 daily flight departures (1 every 90 seconds)







# San Diego County Regional Airport Authority Act (AB 93)

AB  
93

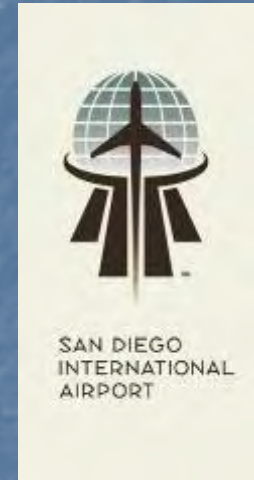
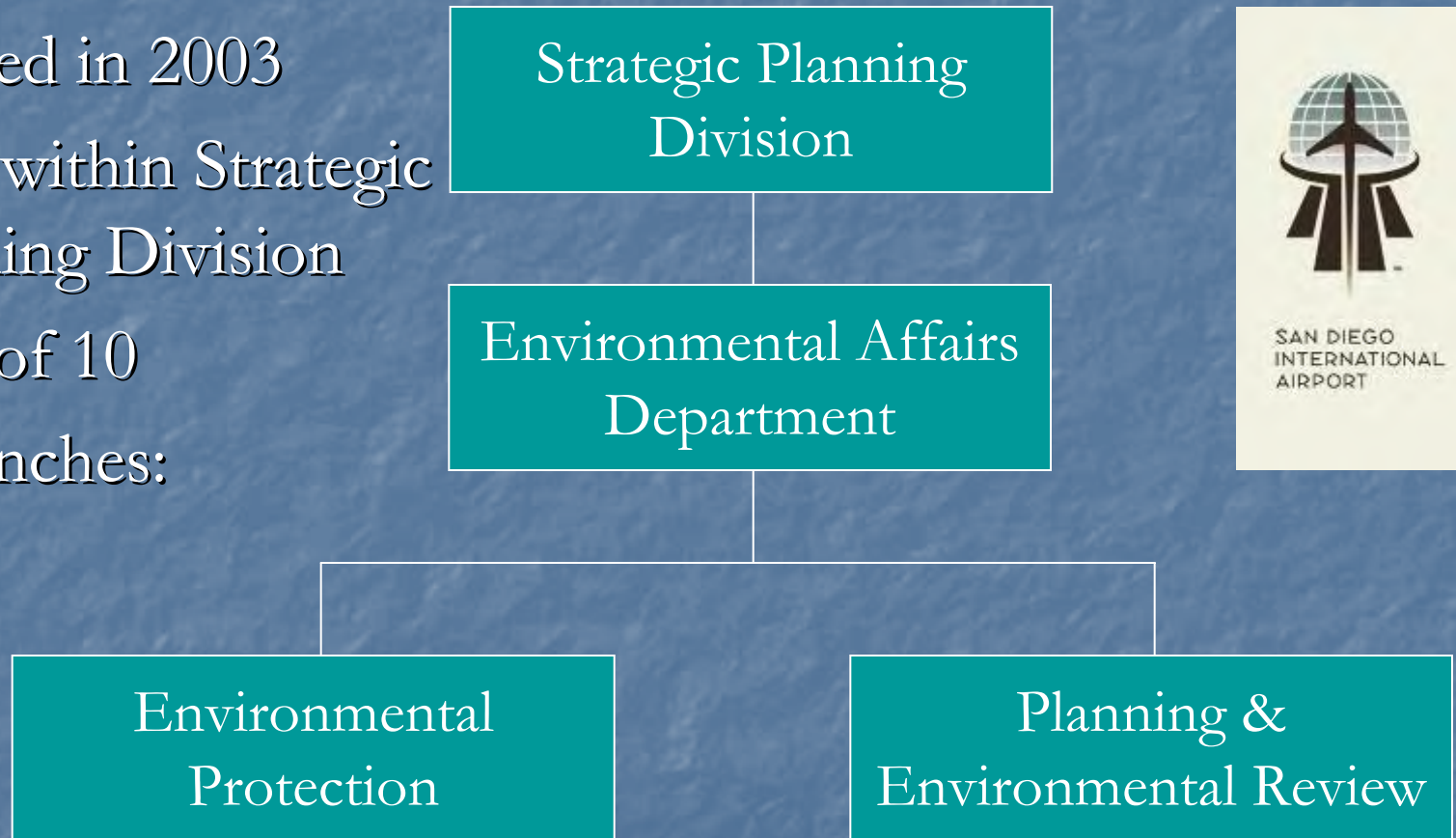
Transferred SDIA ownership and operation from San Diego Port District to newly created Airport Authority (SDCRAA) effective January 1, 2003





# Environmental Affairs Department

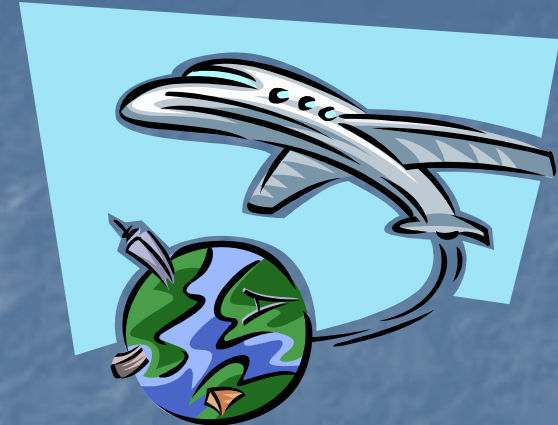
- Created in 2003
- Now within Strategic Planning Division
- Staff of 10
- 2 Branches:







# Role of Environmental Stewardship



## Key Responsibilities

- Ensure compliance with all environmental laws and regulations.
- Ensure management of all of Airport's environmental aspects.
- Protect and promote the natural resources within Authority's jurisdiction.
- Disseminate public information.



# Environmental Aspects (*ISO 14001*)

## *Environmental Aspects:*

"Elements of an organization's activities, products or services that can interact with the environment\*."

*\*Environment:* "Surroundings in which an organization operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation."

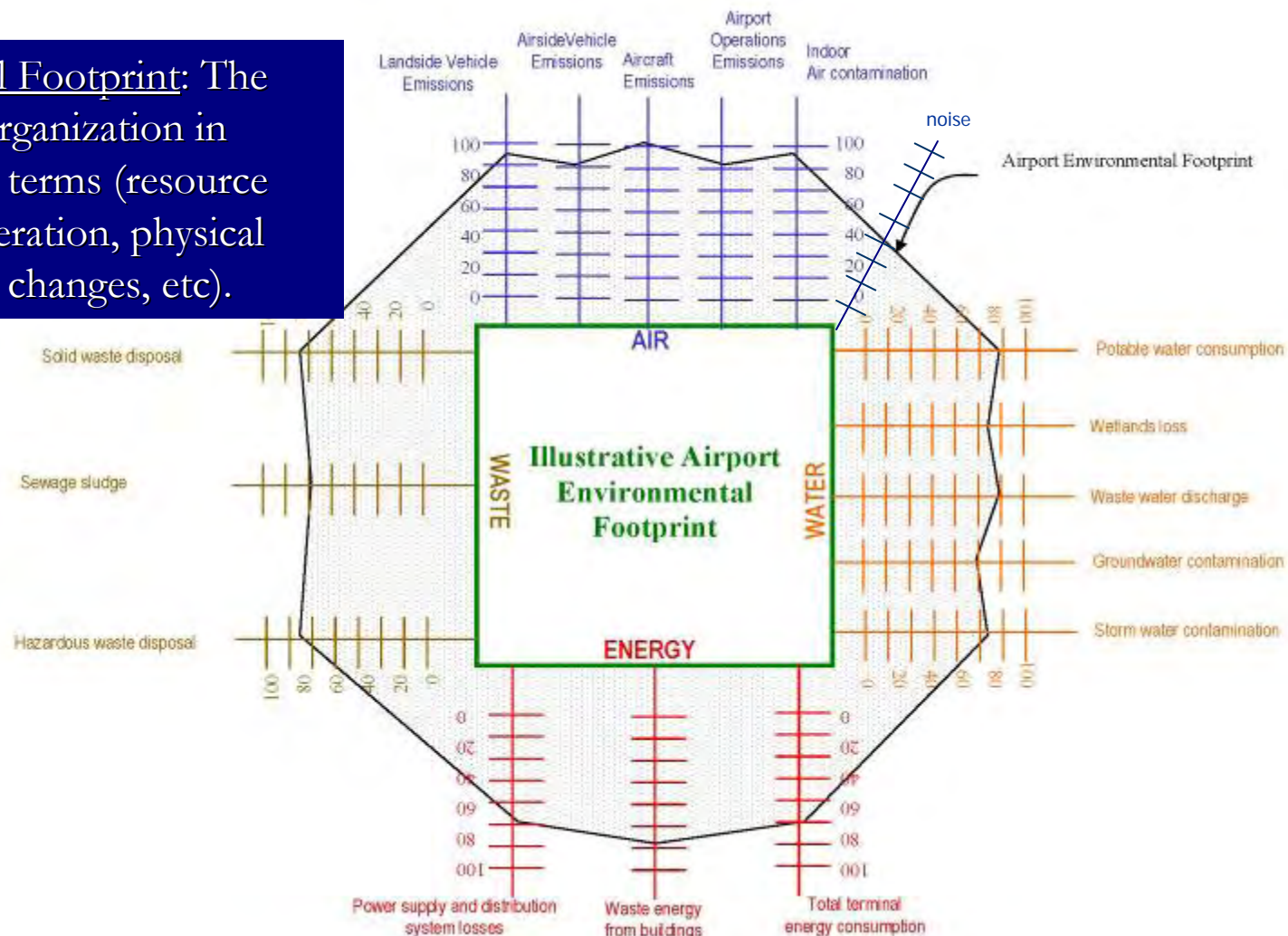






# Environmental Footprint

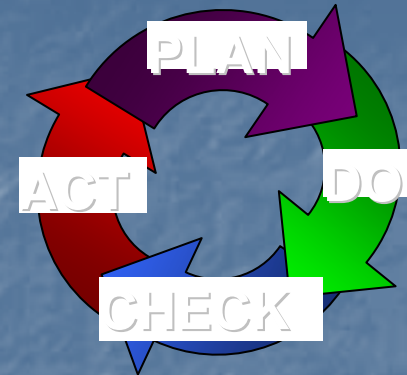
Environmental Footprint: The impact of an organization in environmental terms (resource use, waste generation, physical environmental changes, etc).







# Environmental Management System (EMS)



## Goals

- Establish commitment to pollution prevention & regulatory compliance
- Manage environmental issues more efficiently (& strategically)
- Reduce cost and liabilities (present & future)
- Improve employee understanding & participation (environmental awareness & stewardship)
- Minimize airport's **environmental footprint** (foster efficient use and conservation of resources)



# Airport's Environmental Aspects & Responding Environmental Programs

<u>Environmental Aspects</u>	<u>Environmental Programs</u>
Storm Water Discharges	Storm Water Management Program
Water Quality	Regulatory Compliance Program
Closed Landfill Site	
Hazardous Materials	
Air Quality	Air Quality Management Plan
Solid Waste Generation	Waste Reduction & Recycling Program
Accidental Spills & Releases	Emergency Response Services
Site Contamination	Site Assessment & Remediation Services
Indoor Air Quality	Industrial Hygiene/Hazardous Building Materials Management Program
Lead/Asbestos Abatement	
Wildlife Preservation	Wildlife Monitoring & Predator Control



# Overview of Environmental Programs







# Storm Water Management

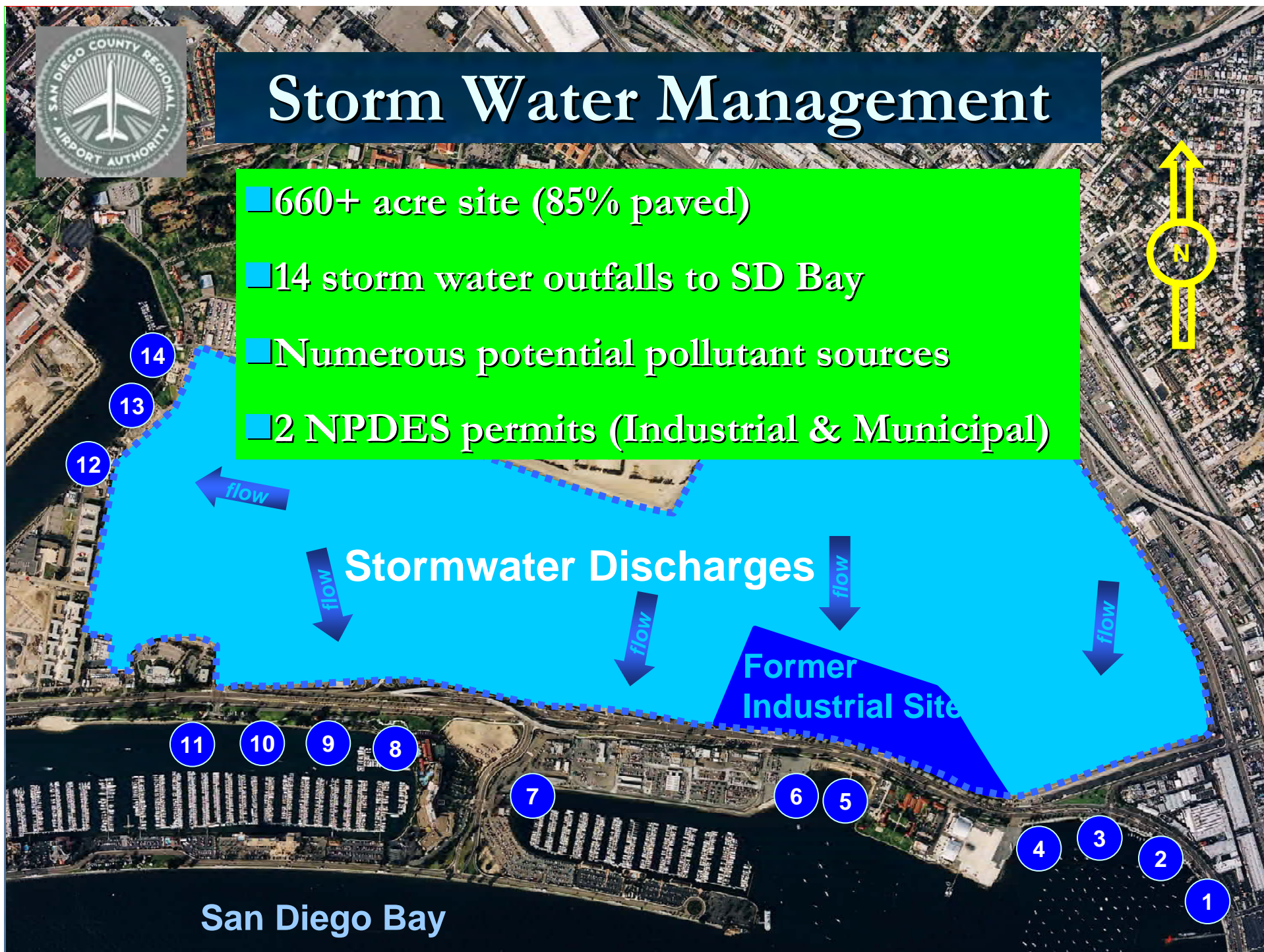
- 660+ acre site (85% paved)
- 14 storm water outfalls to SD Bay
- Numerous potential pollutant sources
- 2 NPDES permits (Industrial & Municipal)



Stormwater Discharges

Former Industrial Site

San Diego Bay



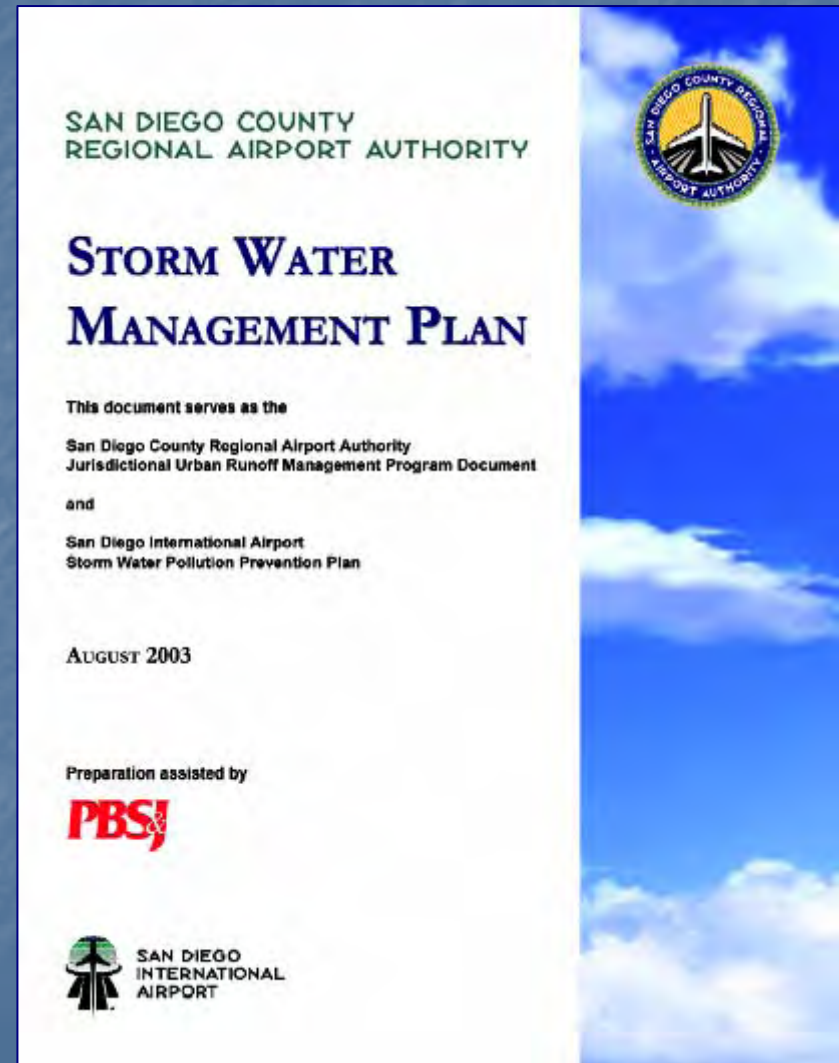




# Storm Water Management Plan

- Applies to all of airport operations, including tenants and contractors.
- Complies with Industrial and Municipal permits.
- Living document.
- Document is available on the Internet:

[www.san.org/environmental](http://www.san.org/environmental)





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- The map shows the San Diego area with the NTC Inactive Landfill highlighted in pink. The landfill is located near the San Diego International Airport and the San Diego Bay. The map also shows the Harbor, San Diego Bay, and various streets and landmarks. The text 'NTC INACTIVE LANDFILL' is prominently displayed in the center of the pink area. Other labels include 'SAN DIEGO INTERNATIONAL AIRPORT', 'SAN DIEGO BAY', 'HARBOR', 'SAN DIEGO', 'LAUREL ST', 'PACIFIC ST', 'SAN DIEGO INTERNATIONAL AIRPORT', 'SAN DIEGO BAY', 'HARBOR', 'SAN DIEGO', 'LAUREL ST', 'PACIFIC ST', 'SAN DIEGO INTERNATIONAL AIRPORT', 'SAN DIEGO BAY', 'HARBOR', 'SAN DIEGO', 'LAUREL ST', 'PACIFIC ST'.







# Air Quality Management Plan

- Baseline Air Emissions Inventory Survey
- Alternative Fuel Vehicles Program
  - Airside: Ground Support Equipment (GSE)
  - Landside:
    - Airport-owned vehicles
    - Shuttle vans/taxicabs
    - Refueling stations/infrastructure
- Stationary Emissions
- Grant assistance to tenants
- Public education/incentives for passengers and employees to use transit to airport
- Mitigation Measures for Airport Master Plan EIR





# Emergency Response

## ■ Accidental Spills and Releases.

Fact: 425,000 gallons of jet fuel are handled at SDIA each day.







# Site Assessment & Remediation

## Technical assistance for engineering projects on:

- Environmental assessment & remediation
- Removal & disposal of contaminated materials
- Demo/construction monitoring & BMPs
- Regulatory agency approvals





# Waste Reduction & Recycling Program



## Regulatory Mandates:

- AB 939 (50% diversion)
- AB 2176 (Large Venue Recycling Plans & Reporting)





# Industrial Hygiene

- Lead/asbestos surveys and abatement.
- Indoor & workplace air quality investigations.

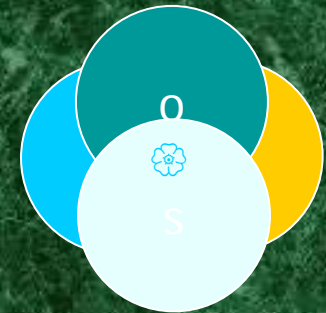




# Airport Sustainability Elements

## Sustainability Elements\* (EONS):

- Economic Vitality
- Operational Efficiency
- Natural Resources Conservation
- Social Improvement



\*Airport Council International-North America (ACI-NA) Model





# Airport Sustainability Initiatives

- LEED\* Certification for New and Existing Buildings
- Development and adoption of Airport-Specific Sustainability Criteria Index (ACI-NA)
- Alignment of Sustainability Elements with Strategic Business Plan.

\*Leadership in Energy & Environmental Design



# Wildlife Preservation



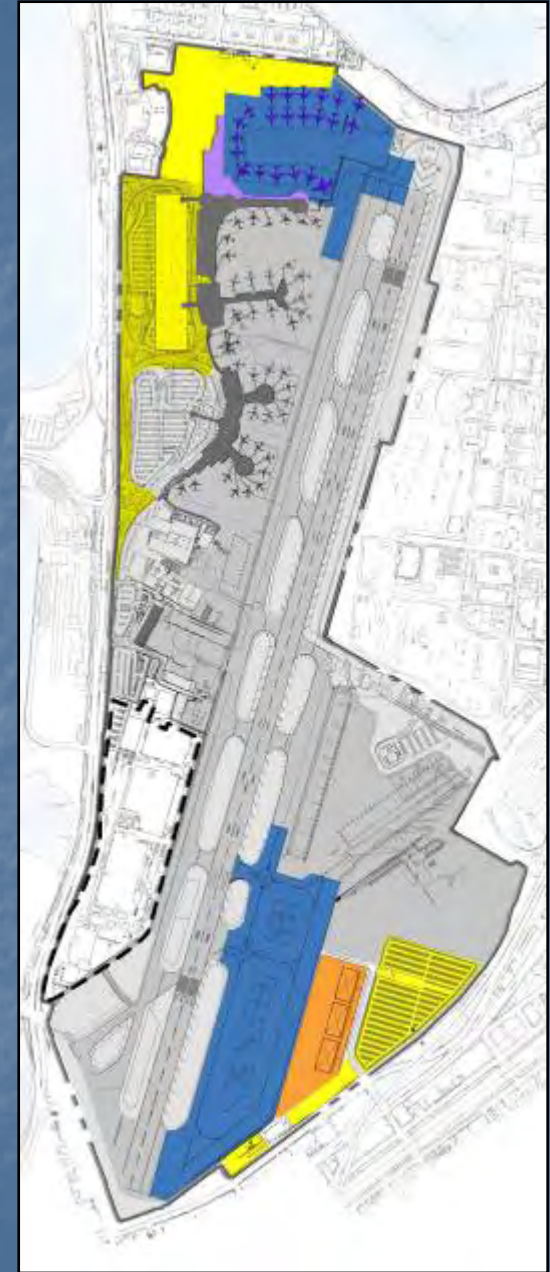




# Planning and Environmental Review

## Responsible for:

- Long-term facility planning
  - Aviation Activity Forecast
  - Airport Master Plan
- Environmental Review
  - State (CEQA) and Federal (NEPA)
- Coastal Review and Permitting



# Developing Performance Measures







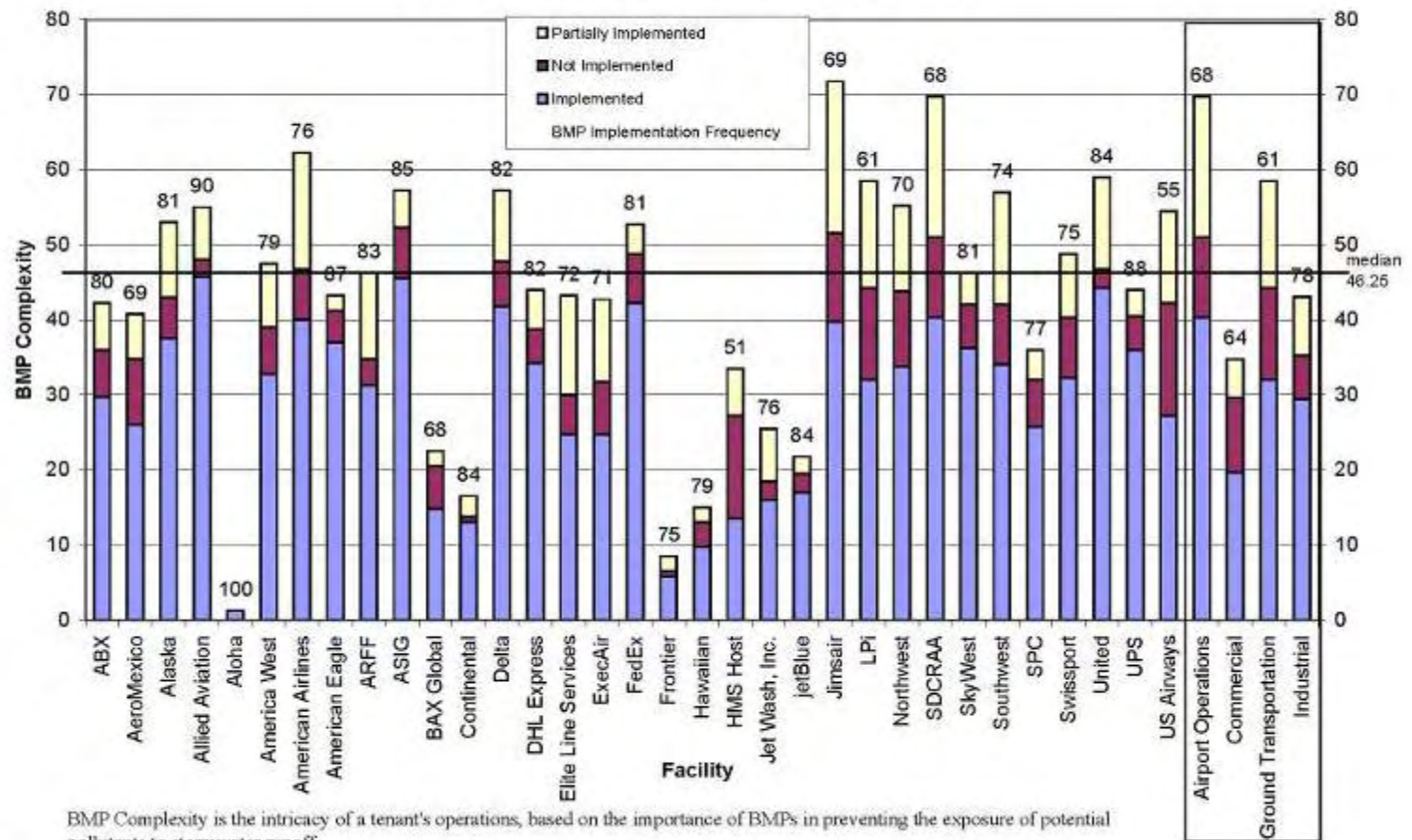
# Performance Measures

<u>Programs</u>	<u>Performance Measures</u>	<u>Reporting (on website*)</u>
Storm Water BMP Effectiveness	<ul style="list-style-type: none"> <li>■ BMP implementation rates</li> <li>■ Wet weather sampling</li> </ul>	Annual Municipal & Industrial Reports*
Regulatory Compliance	<ul style="list-style-type: none"> <li>■ # of violations</li> <li>■ # of staff trained</li> </ul>	Annual Municipal Report*
Air Quality Management	<ul style="list-style-type: none"> <li>■ Air emissions inventory</li> <li>■ # of AFV conversions</li> </ul>	AMP EIR*; Annual Air Quality Report
Waste Reduction & Recycling	<ul style="list-style-type: none"> <li>■ Annual waste surveys</li> <li>■ Waste hauler data</li> </ul>	Annual Waste Audit Report
Lead/Asbestos Abatement	<ul style="list-style-type: none"> <li>■ Annual building surveys</li> </ul>	Annual Reports*
Sustainable Development	<ul style="list-style-type: none"> <li>■ LEED certification</li> <li>■ ACI sustainability criteria</li> </ul>	Under development
Wildlife Preservation	<ul style="list-style-type: none"> <li>■ Least tern monitoring</li> <li>■ Predator monitoring</li> </ul>	Annual Report to U.S. Fish & Wildlife Services



# Metrics: BMP Implementation Rates

**Figure 5**  
**BMP Complexity and Implementation Frequency**



BMP Complexity is the intricacy of a tenant's operations, based on the importance of BMPs in preventing the exposure of potential pollutants to stormwater runoff.

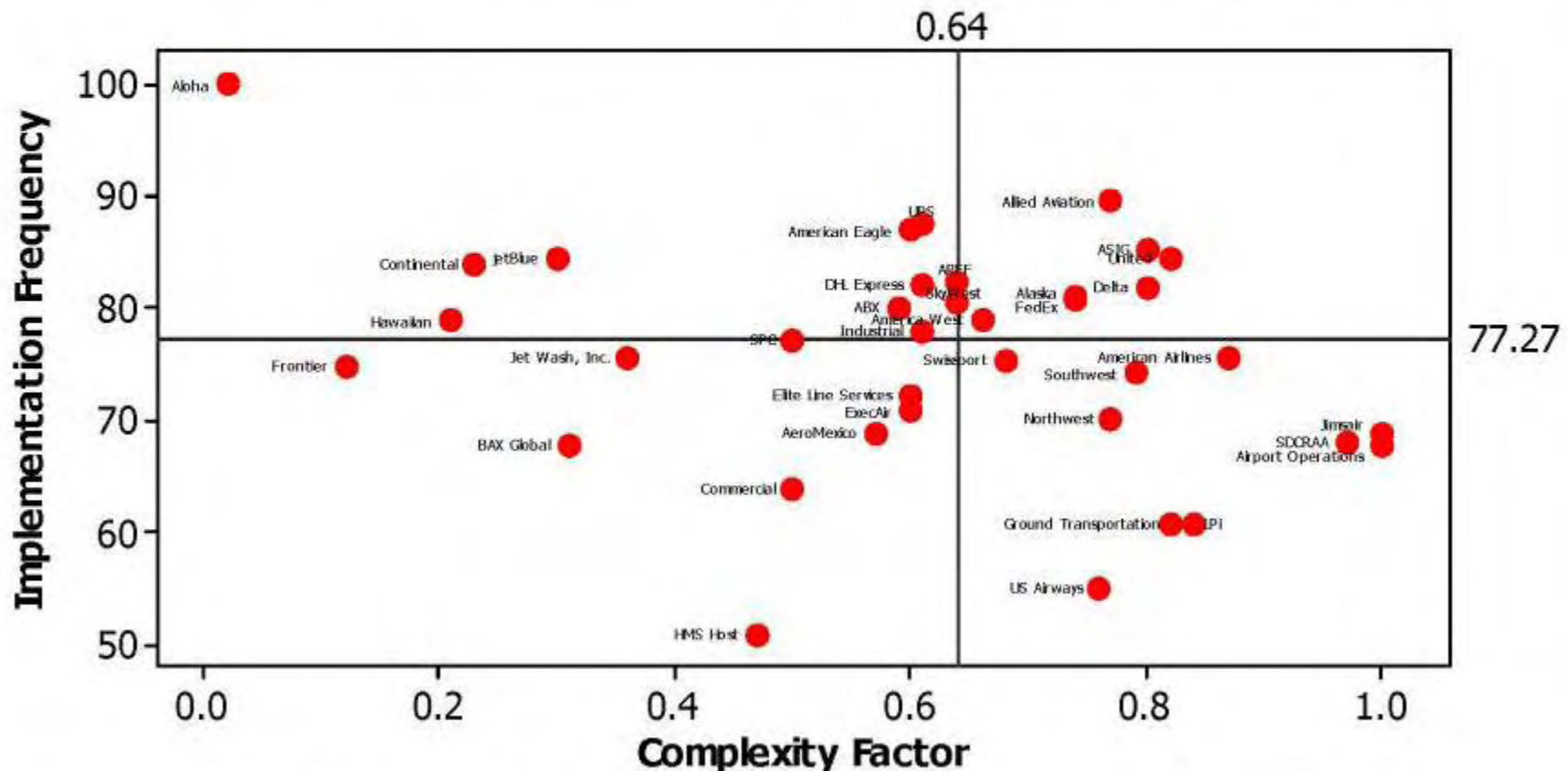
Implementation Frequency is the percent of applicable BMPs implemented by a tenant. See Section 2.3 for further information.





# BMP Metrics as Management Tool

**Figure 6**  
**Distribution of Implementation Frequency and Complexity**



Implementation Frequency is the percent of applicable BMPs implemented by a tenant.

BMP Complexity is the intricacy of a tenant's operations, based on the importance of BMPs in preventing the exposure of potential pollutants to stormwater runoff. See Section 2.3 for further information.

# Specific Projects







- Used by Navy from 1950-1971 as disposal site.
- Operated as burn dump until mid-1960s, then as trench fill for Naval housing MSW.
- 52-acre site; former least tern nesting area.
- Property transferred to Port in 2000 (and Airport in 2003).
- Proposed Clean Closure for Airport Terminal 2 expansion.







# Burn Ash (33,000 cy)

**Groundwater at 5-11 ft., tidally influenced.**

**MSW  
(170,000 cy)**

**Inert/C&D**  
**(? cy)**

## Proposed Terminal Development





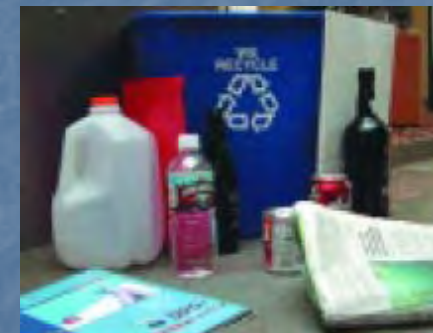


# Waste Reduction and Recycling Baseline Study



## Goals & Objectives:

- Develop Reference Baseline for Airport to Establish Current Progress (“Metrics”)
- Optimize Existing Program
- Identify Potential New Programs
- Integrate into Airport’s Overall EMS

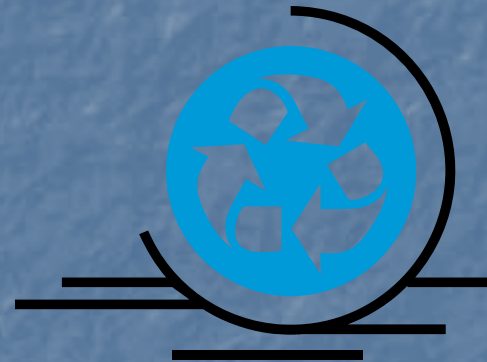




# Joint Cooperative Effort

## Waste Reduction & Recycling Survey Team

- Airport Authority
- CIWMB
- City of San Diego
- E. Tseng and Associates
- EcoTelesis International (Non-Profit)
- Pacific Waste







# Waste Reduction & Recycling Baseline Study Report



- CIWMB “Large Venue” Case Study (for CIWMB website)
- *MSW Management Magazine* Article on Model Airport Recycling Programs
- EcoTelesis Airport Case Study for Training Program
- Performance measure for airport’s EMS

## 2004 Baseline Survey Results Total Waste Generation (11,314 tons)

Source  
Reduction  
(2996 tons)  
27%



Recycling  
(2905 tons)  
26%



Disposal  
(5315 tons)  
47%





# Endangered Species Monitoring: California Least Tern (CLT)

## Habitat Protection

- Listed under both Federal and California State Endangered Species Act since 1972.
- Greatest impacts on CLT population are caused by habitat loss due to continuing increase in urbanization.







# California Least Tern (CLT) - Characteristics and Appearance



- Migratory Seabird ranging from San Francisco Bay to Baja California, Mexico.
- Smallest of North American terns – adults average 1.6 oz with 1 ft wingspan.
- Black cap, white forehead and under parts, grayish wings & tail.
- Orange-yellow bill, legs, and feet.





# Nesting (April – September)

- Both males and females share nesting responsibilities.
- Eggs are incubated for approximately 23 days.
- Eggs are 1.2 inches long and speckled to camouflage with surrounding habitat.







# CLT Feeding



- California Least Terns are known to dine on more than 50 different species of fish.
- Most common prey in San Diego Bay is Topsmelt.





# Airport Authority's California Least Tern Colonies

Airport Authority responsible for monitoring & maintaining 2 CLT nesting sites:

- SDIA
- Chula Vista Wildlife Reserve







# California Least Tern Nesting Ovals at SDIA







# Chula Vista Wildlife Reserve Least Tern Nest Sites and Grid



## Legend

-  Least Tern Nesting Grid
-  Least Tern Nesting Area

1 inch equals 200 feet

San Diego County Regional Airport Authority  
Environmental Affairs  
March 3, 2005

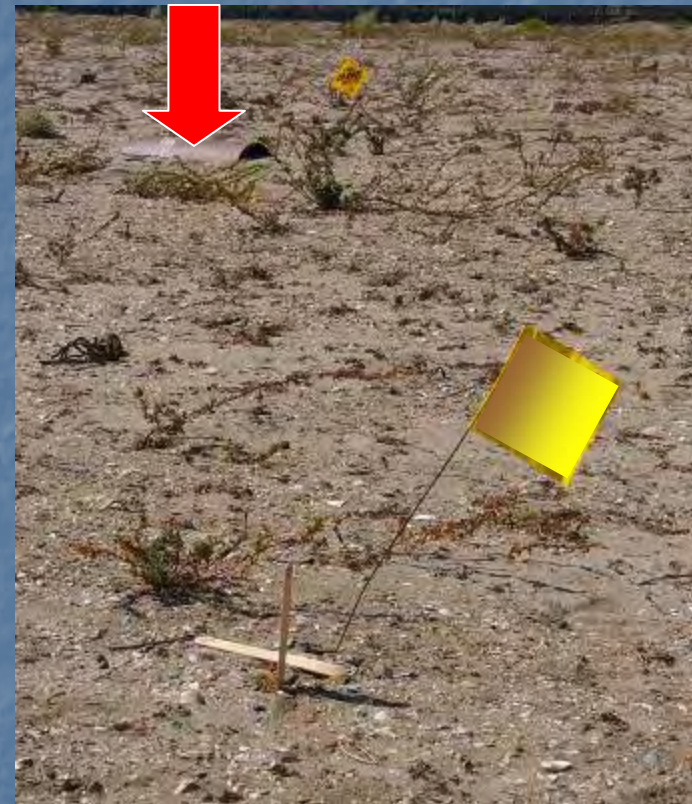
0 100 200 400 600 800 Feet





# Least Tern Nest Site Preparations

Ceramic Tile at  
Chula Vista Wildlife Reserve



Chick Barrier at SDIA



Least Tern Decoys at  
Chula Vista Wildlife Reserve





# CLT Chick Measurements



- On average, newly hatched chicks weigh 0.21 ounces.
- They have an average wing length of one-half inch.
- They are ready for flight by 21 days.







# CLT Nesting/Hatching Data

Data collected & linked to GIS.

MASTER NEST LIST 2004									
Location: Lindbergh Field				Date of First Adults					
Nest No.	Grid Nest Number	Date	No. of Eggs	Expected Hatch	Actual Hatch	Expected Fledge	Other Outcome	Date	Band No.
1	5/6 C	5/14	1-2	5/28	2-6/2				
✓ 2	1A	5/14 (5/11)	2		1-6/1, 1-6/3				
✓ 3	4B	5/14	1-2	5/28					
✓ 4	4A	5/18	2						
5	5B	5/18	2						
6	6B	5/18	2						
7	6B	5/18	1-2	5/28					
8	6C	5/18	1-2	5/28					
9	5D	5/18	2						
✓ 10	1B	5/20	2						
11	4A	5/20	1-2	5/24					
12	4A	5/20	1-2	5/24					
13	5B-5C	5/20	1						
14	5C	5/20	1-2	5/24					
✓ 15	1A	5/24	2						
✓ 16	1B	5/24	2						
✓ 17	1B	5/24	2						
✓ 18	1B	5/24	2						
✓ 19	1B	5/24	1-2	5/28					
✓ 20	1B 5A	5/24	2						
21	5A 6C	5/25	2						
22	6C	5/25	1-2	5/29					
23	6C	5/25	1						
24	6C 5D	5/25	1						
25	5A 5A	5/25	2						
26	5A 2A	5/25	1-2	6/1					
27	3A 1B	5/25	1-2	5/29					
✓ 28	1A	5/25	1		2-6/17				
✓ 29	1A	5/25	1-2	5/29	1-6/15				
✓ 30	1A	5/25	1		1-6/15, 1-6/22				
✓ 31	1C	5/25	1-2	5/29	1-6/15, 6/22			6/22	
✓ 32	2B	5/25	1		1-6/15				
✓ 33	2D	5/25	1		1-6/15				

